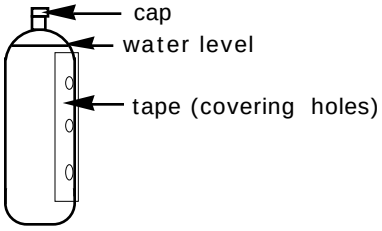
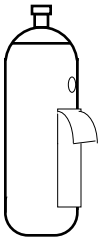
Name_____ Date_____Per.____

The Three-Hole Bottle Demo Report

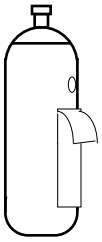
1. Compare the bottle used with the diagram at right. Point out any differences noted, or sketch the demo bottle as you see it.



2. PREDICT what you think will happen when your teacher pulls the tape off the top hole. You can describe the expected result, or show it on the diagram at right.

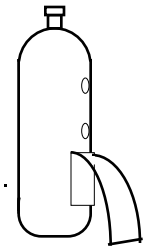


3. Show (and/or describe) what actually DID happen.

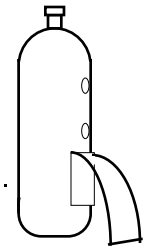


4. How would you explain what happened? (In other words, what do you think caused to happen what did happen?). You might be able to list 2 or 3 reasonable, possible explanations.

5. Select one of your explanations (your "most likely" one, mark that one with an X), and based on that possible explanation, what do you predict will happen when the tape is pulled down exposing the second hole? (Describe, and/or show on the diagram).



6. Show (and/or describe) what actually DID happen.

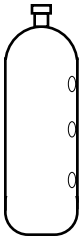


7. Did the results match your prediction? _____
   If so, what does that suggest about your **possible explanation** (hypothesis)?_____

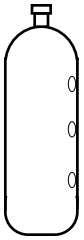
   If NOT, what does THAT suggest about your **hypothesis**?_____

8. If necessary, propose a second hypothesis:

9. Now, based on your best hypothesis, what do you predict will happen when the tape is fully removed from all three holes?



10. Show (and/or describe) what actually DID happen.



11. Did the results match your prediction? _____
If so, what does that suggest about your **possible explanation** (hypothesis)?_____

If not, what does THAT suggest about your **hypothesis**?_____

12. Summarize briefly what this entire experience tells you about how science solves problems?

13. Explain why some hypotheses are better than others; in other words, what are the characteristics of good hypotheses which may be lacking from poor hypotheses?

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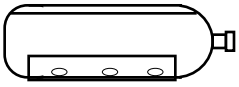
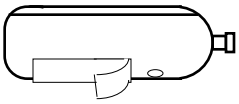
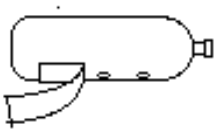
14. Now we'll go back to the bottle, with the tape covering the three holes and the bottle full of water, but the bottle will be held **horizontally**, with all the holes facing down.



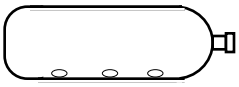
15. Assuming your best hypothesis for the actions with the vertical bottle might apply as well to the horizontal bottle, predict what is likely to happen when the tape is removed from the first hole (show and/or describe):



16. Predict what is likely to happen now when the tape is peeled down further to reveal the second hole (show and/or describe):



17. Finally, predict what is likely to happen when the tape is removed from all three holes (show and/or describe):



18. If possible, **test** your hypothesis by using the teacher's bottle, or building your own bottle and performing the above actions. Record all observations. Write up your work using our lab report format. Your peers will critique your work in our "Three-Hole Bottle Symposium".

19. Explain how the modern flush toilet (that miracle of human technology) is similar to the bottle systems used in this activity. Do this neatly, using diagrams as appropriate.